

# NASA TECH BRIEF



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## Computer Program Analyzes Generalized Environmental Control and Life Support Systems

Analysis of environmental control and life support systems are often, of necessity, time consuming. To expedite these analyses through a computer program requires a program that easily permits changes of (1) system component arrangements, (2) component design details, and (3) operating modes (design conditions, off-design conditions, failure conditions, etc.). The G-189 Generalized Environmental Control and Life Support System Program was written to accomplish these goals for a very wide range of systems.

Two separate sets of program decks are available: one for computing steady-state performance only, and one for computing steady-state performance (initial conditions) followed by transient performance.

The program's versatility results from its use of an analysis-controlling routine called the master control block. The master control block directs computations which are performed by a set of component subroutines, and the master control block itself.

Iterative methods of solution are employed by the program for component and system analyses. Calculated values of system variables are tested for convergence against target values. These target values are indicated by (1) desired design conditions and (2)

computational convergence. When convergence is not attained the program reestimates the values of the variables that influence convergence of the tested variables and iterative computations are repeated.

### Notes:

1. This program was written in Fortran IV language for use on the IBM 7094 computer.
2. Inquiries concerning this program may be directed to:

COSMIC  
Computer Center  
University of Georgia  
Athens, Georgia 30601  
Reference: B67-10415

### Patent status:

No patent action is contemplated by NASA.

Source: Richard Leroy Vaughan  
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